

Unit 5

Day 3

Factoring Using Integers

Part 3

Sum or Difference of Cubes

$$x^3 + y^3 = (x + y)(x^2 - xy + y^2)$$

$$x^3 - y^3 = (x - y)(x^2 + xy + y^2)$$

Ex1: $27a^3 - 8 = (3a - 2)(9a^2 + 6a + 4)$

Ex2: $125y^6 + 1 = (5y^2 + 1)(25y^4 - 5y^2 + 1)$

Substitution:

Ex3:

$$2(x+1)^2 + 17(x+1) + 8$$

$$\begin{aligned} & 2y^2 + 17y + 8 \\ & (2y+1)(y+8) \\ & [2(x+1)+1](x+1+8) \\ & (2x+3)(x+9) \\ & y = x+1 \end{aligned}$$

Ex4:

$$z = y+4$$

$$(y+4)^3(y-2) - 27(y-2)$$

$$\begin{aligned} & z^3x - 27x \\ & x(z^3 - 27) \\ & x(z-3)(z^2+3z+9) \\ & (y-2)[y+4-3][(y+4)^2+3(y+4)+9] \\ & (y-2)(y+1)(y^2+8y+16+3y+12+9) \\ & (y-2)(y+1)(y^2+11y+37) \end{aligned}$$

HW Wksht 3, pg 42-44 2,9,10,35,36,46-56,63-68 all